

WHAT IS CLAIMED IS:

1. A method for operating a wireless-enabled device, the method comprising:

computing a DC compensation factor for a known pilot signal;

receiving a first plurality of bits of an incoming pilot signal;

computing a DC average for the received first plurality of bits of the incoming pilot signal;

computing a compensated DC average for the first plurality of bits of the incoming pilot signal using the DC compensation factor and the DC average;

adjusting at least an indication of the received first plurality of bits according to the computed compensated DC average;

comparing the adjusted at least an indication of first plurality of bits with corresponding bits of the known pilot signal; and

responsive to a threshold number of bits of the adjusted at least an indication of first plurality of bits matching the corresponding bits of the known pilot signal, outputting the compensated DC average for the first plurality of bits.
2. The method of claim 1, further comprising:

receiving a second plurality of bits of the incoming pilot signal; and

locating a symbol peak in the second plurality of bits;

wherein the symbol peak is usable to determine a symbol timing of the incoming pilot signal.

3. The method of claim 2, further comprising:
- receiving a third plurality of bits of the incoming pilot signal;
 - adjusting at least an indication of the received third plurality of bits according to the computed compensated DC average;
 - comparing the adjusted at least an indication of third plurality of bits with corresponding bits of the known pilot signal; and
 - responsive to a threshold number of bits of the adjusted at least an indication of first plurality of bits matching the corresponding bits of the known pilot signal and responsive to a threshold number of bits of the adjusted at least an indication of third plurality of bits matching the corresponding bits of the known pilot signal, providing the compensated DC average for the first plurality of bits to a DC tracker.
4. The method of claim 1, further comprising:
- outputting the compensated DC average for the first plurality of bits to a DC tracker.
5. The method of claim 1, wherein the pilot signal comprises:
- a frame sync pattern.

6. An electronic device comprising:
- a receiver configured to receive a data signal;
 - an analog-to-digital converter coupled to the receiver, the analog-to-digital converter configured to generate a digital representation of the received data signal;
 - a logic unit coupled to the analog-to-digital converter, the logic unit configured to compute an average DC value (DC_{avg}) for the digital representation of the received data signal;
 - a compensation unit coupled to the logic unit; and
 - a synchronization word storage device coupled to the compensation unit, the synchronization word storage device configured to store a synchronization word;
- wherein the compensation unit is configured to compute a compensated average DC value (DC_{avg_comp}) using the DC_{avg} and at least a portion of the synchronization word stored in the synchronization word storage device;
- whereby the DC_{avg_comp} is usable to compensate for a DC offset included in the digital representation of the received data signal.

7. The electronic device of claim 6, wherein the receiver comprises:
- a radio frequency (RF) receiver.
8. The electronic device of claim 7, wherein the receiver comprises:
- a converter configured to convert an RF signal to an IF (intermediate frequency) signal.

9. The electronic device of claim 6, further comprising:
- a correlation module coupled with the compensation unit, the correlation module configured to correlate at least a representation of the digital representation of the received data signal with at least a portion of the synchronization word;
- whereby a frame detection can be declared.
10. The electronic device of claim 9, further comprising:
- a peak detector coupled with the correlation module, the peak detector configured to identify a symbol peak included in the digital representation of the received data;
- wherein the symbol peak is usable to indicate symbol timing to the correlation module.
11. The electronic device of claim 6, wherein the electronic device is a cellular phone.
12. The electronic device of claim 6, wherein the electronic device is a personal digital assistant.
13. The electronic device of claim 6, wherein the electronic device is a peripheral device.

14. A system for operating a wireless-enabled device, the system comprising:
- means for computing a DC compensation factor for a known pilot signal;
 - means for receiving a first plurality of bits of an incoming pilot signal;
 - means for computing a DC average for the received first plurality of bits of the incoming pilot signal;
 - means for computing a compensated DC average for the first plurality of bits of the incoming pilot signal using the DC compensation factor and the DC average;
 - means for adjusting at least an indication of the received first plurality of bits according to the computed compensated DC average;
 - means for comparing the adjusted at least an indication of the first plurality of bits with corresponding bits of the known pilot signal; and
 - responsive to a threshold number of bits of the adjusted at least an indication of first plurality of bits matching the corresponding bits of the known pilot signal, means for outputting the compensated DC average for the first plurality of bits.
15. The system of claim 14, further comprising:
- means for receiving a second plurality of bits of the incoming pilot signal; and
 - means for locating a symbol peak in the second plurality of bits;
- wherein the signal peak is usable to determine a symbol timing of the incoming pilot signal.
16. The system of claim 15, further comprising:

means for adjusting at least an indication of the received third plurality of bits according to the computed compensated DC average;

responsive to a threshold number of bits of the adjusted at least an indication of the first plurality of bits matching the corresponding bits of the known pilot signal and responsive to a threshold number of bits of the adjusted at least an indication of the third plurality of bits matching the corresponding bits of the known pilot signal, means for providing the compensated DC average for the first plurality of bits to a DC tracker.

17. A method for operating a wireless-enabled device, comprising:
- receiving a synchronization word;
 - computing a DC average for a first portion of the received synchronization word;
 - computing a DC compensation factor using a known synchronization word;
 - computing a compensated DC average using the DC average and the DC compensation factor;
 - determining whether a threshold number of bits of the first portion of the received synchronization word as adjusted by the DC compensation factor match corresponding bits in the known synchronization word; and
 - responsive to a threshold number of bits of the first portion of the received synchronization word as adjusted by the DC compensation factor matching the corresponding bits in the known synchronization word, providing the compensated DC average to an offset tracking device.

18. The method of claim 17, wherein the DC average for the first portion of the received synchronization word is a first DC average and wherein the compensated DC average is a first compensated DC average, the method further comprising:

responsive to a threshold number of bits of the received synchronization word as adjusted by the DC compensation factor not matching the corresponding bits in the known synchronization word, computing a second DC average for a second portion of the received synchronization word;

computing a second compensated DC average using the second DC average for the second portion of the received synchronization word and the DC compensation factor;

determining whether a threshold number of bits of the second portion of the received synchronization word as adjusted by the DC compensation factor match corresponding bits in the known synchronization word; and

responsive to a threshold number of bits of the second portion of the received synchronization word as adjusted by the DC compensation factor matching the corresponding bits in the known synchronization word, providing the second compensated DC average to an offset tracking device.

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19. An apparatus comprising:

an analog-to-digital converter configured to generate a digital representation of a received pilot signal, wherein the received pilot signal comprises an incoming synchronization word;

a DC offset estimator coupled to the analog-to-digital converter; and

a synchronization word storage device coupled to the DC offset estimator, the synchronization word storage device configured to store a known synchronization word;

wherein the DC offset estimator is configured to compute an estimated DC offset using at least a portion of the synchronization word from the storage device and at least a portion of the digital representation of the received pilot signal generated by the analog-to-digital converter.

20. The apparatus of claim 19, wherein the DC offset estimator comprises:

a correlation module configured to correlate at least a portion of the digital representation of the received pilot signal with at least a portion of the known synchronization word;

whereby a frame detection can be declared.

21. The apparatus of claim 20, wherein the DC offset estimator further comprises:

a peak detector coupled with the correlation module, the peak detector configured to identify a symbol peak included in the digital representation of the received pilot signal;

wherein the symbol peak can be used by the correlation module to determine symbol timing.

22. The apparatus of claim 19, wherein the DC offset estimator comprises:

a logic unit configured to compute an average DC value (DC_{avg}) for the digital representation of the received pilot signal; and

a compensation unit coupled to the logic unit;

wherein the compensation unit is configured to compute a compensated average DC value (DC_{avg_comp}) using the DC_{avg} and at least a portion of the known synchronization word stored in the synchronization word storage device.

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23. An apparatus comprising:
- a receiver module;
 - an A/D converter connected to the receiver module; and
 - an estimation module connected to the A/D converter.
24. The apparatus of claim 23, further comprising:
- a DC tracker connected to the estimation module.
25. The apparatus of claim 24, wherein the estimation module comprises:
- a DC offset estimation module; and
 - a frame detector module.
26. The apparatus of claim 25, further comprising:
- a bit synchronizer.

27. A system comprising:
- a receiver module;
 - an A/D converter connected to the receiver module;
 - an initial estimation module connected to the A/D converter; and
 - a DC tracking loop connected to the initial estimation module.

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